

BATHING ENCLOSURE SLIDING DOOR PANELS
HAVING COMPLEMENTARY VISUAL CHARACTERISTICS

CROSS-REFERENCE TO RELATED APPLICATION

5 [0001] Not applicable.

STATEMENT OF FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not applicable.

BACKGROUND OF THE INVENTION

10 [0003] The present invention relates to bathing enclosures such as shower enclosures and shower/bath enclosures. More particularly it relates to door assemblies useful therewith having decorative attributes that are apparent regardless of whether the doors are overlapped or not.

15 [0004] Contemporary bathing enclosures for showers and bathtubs commonly have door assemblies that allow for entry into and egress from the enclosures, and can be moved to close off the entry when the enclosure is in use. Two or three doors are employed in such assemblies
20 in a sliding/bypass configuration with respect one another. In this type of configuration, the entry is opened when at least two of the doors are made to essentially completely overlap, and the entry is closed by minimizing the degree of overlapping of the doors.

25 [0005] Many of such doors are made of transparent or translucent materials (particularly plastics or glass) to improve the amount of light entering the enclosure. It is also known in the art to include various imagery on such panels, such as floral patterns.

30 [0006] Such imagery may be for largely decorative purposes, but may also be informational in some situations. Unfortunately, when such doors are positioned in overlapping configuration the imagery tends to become "muddled", particularly if the front panel is
35 transparent. For example, where both transparent sliding

doors of a bathing enclosure include floral images, and the doors are moved so that they overlap, the overall appearance of the overlapping doors can ornamentally become unrecognizable.

5 [0007] Therefore, it can be seen that a need exists for transparent or translucent paneling for bathing enclosures where the doors are ornamented in an improved manner.

SUMMARY OF THE INVENTION

10 [0008] In one aspect the present invention provides a door assembly for a bathing enclosure. It has a first door suitable to slide along an entry of the bathing enclosure, the first door having a transparent or translucent portion and a portion with a first imagery.
15 There is also a second door suitable to slide along the entry of the bathing enclosure into and out of an overlapping relationship to the first door, the second door having a portion with a second imagery.

[0009] The first imagery and second imagery are
20 complementary in appearance so that when the first and second doors overlap each other to a specified extent the first and second imagery combine to form an overall image feature that is a representation of a real object and is visible from a front side of the first door.

25 [0010] In one preferred form the overall image feature comprises a target having a bull's eye, such as where there are at least two linear components extending outward away from the target in two different directions.

[0011] In another form the overall image feature
30 comprises a keyboard.

[0012] Both the first and second doors can have a transparent or translucent portion, preferably both being transparent apart from the imagery and the outer rim.

[0013] In another aspect the invention provides such a
35 door assembly mounted on a bathing enclosure.

[0014] The invention is advantageous because it creates doors that have ornamental designs that present a decorative appearance regardless of whether the doors are overlapped or not. This can be achieved at relatively low cost, and can create interesting and unique ornamental effects.

[0015] While preferred embodiments will be described below, the following is merely intended as some examples of the invention. For an understanding of the full scope of the invention, the claims which follow that description should be referred to.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a perspective view of an exemplary bathing enclosure having two sliding doors;

[0017] FIG. 2 is an elevation view of the panels of FIG. 1, in a non-overlapped position corresponding to a fully-closed position of the sliding doors;

[0018] FIG. 3 is an elevation view of the pair of panels of FIG. 2, in which the panels are in a position corresponding to a fully-open, overlapped positioning of the sliding doors;

[0019] FIG. 4 is a view similar to FIG. 2, but of alternative panels; and

[0020] FIG. 5 is a view similar to FIG. 3 of the FIG. 4 embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0021] Referring first to FIG. 1, an exemplary bathing enclosure is shown, which in this case is a shower bathing enclosure 10 and in alternate embodiments could be an enclosure for a bathtub, a hot tub or whirlpool, or another type of bathing enclosure. As shown, the bathing enclosure 10 includes a floor 20 with a drain 30, a ceiling 40, first, second and third side walls 50, 60 and 70, respectively, and a shower head 80 mounted on the first side wall. Additionally, positioned along a

further outer side entry 90 of the bathing enclosure 10 are first and second sliding doors 100 and 110, respectively.

[0022] The sliding doors 100,110 each are mounted on upper and lower guiding rails 120 and 130, respectively, in the usual manner, such that both of the sliding doors is slidably movable relative to the other of the sliding doors in a by-pass relationship. In a fully-opened position of the sliding doors, one of the two doors is positioned entirely (or almost entirely) in front of the other, such that the two doors overlap. In a fully-closed position, which is shown in FIG. 1, the doors are slid apart from one another so that the doors only overlap, if at all, along a junction 140 between the two doors.

[0023] In the embodiment of FIG. 1, the first sliding door 100 is positioned on the rails 120, 130 such that the first sliding door tends to slide in front of the second sliding door 110, along the outside of the bathing enclosure 10, while the second sliding door tends to slide in back of the first sliding door, along the inside of the bathing enclosure. However, in alternate embodiments, the orientations of the two sliding doors 100, 110 could be reversed. In further alternate embodiments, the bathing enclosure only has a single sliding door (e.g., the first sliding door 100), which is capable of sliding in front of or in back of a fixed wall, which could take the place of the second sliding door 110.

[0024] In additional alternate embodiments the bathing enclosure could employ more than two sliding doors, a sliding door that is capable of sliding in front of or in back of two or more fixed walls, or two or more sliding doors capable of sliding in front of or in back of one or more fixed walls. Further, while the sliding doors 100,

110 of FIG. 1 as well as the aforementioned side walls 50, 60 and 70 and additional fixed walls of alternate embodiments are shown or suggested to be planar, this need not be the case in all embodiments. For example, in one alternate embodiment, the overall bathing enclosure could be cylindrical in shape and employ sliding doors and/or wall portions that were portions of cylinders.

[0025] The first and second sliding doors 100, 110 of FIG. 1 include first and second panels 150 and 160, respectively, that are supported within first and second rectangular support structures 170 and 180, respectively. The rectangular support structures 170 and 180 not only provide structural support for the panels 150, 160 but also have, along their upper and lower edges, mechanisms (not shown) that allow the sliding doors 100, 110 to properly interface and slide along the rails 120, 130. These mechanisms can include, for example, complementary rails/slots for sliding in relation to the rails 120, 130, as well as roller bearings and other components that are known to those of ordinary skill in the art. Depending upon the embodiment, the rails 120, 130 can also be substituted with slots or other mechanisms that allow for sliding operation of the sliding doors 100, 110.

[0026] Each of the first and second panels 150, 160 is made from a plastic, acrylic, glass or other similar material that is fully, or at least largely, transparent or translucent. Thus, substantial light that exists outside the bathing enclosure 10 is transmitted into the enclosure, and at least some light existing within the bathing enclosure is transmitted to outside of the enclosure. Depending upon the material that is used for the panels 150, 160, a certain proportion of light incident upon the panels may also be reflected.

[0027] While the first and second panels 150, 160 are largely or fully transparent or translucent, the panels additionally include first and second image features or patterns 190 and 200, respectively. Depending upon the embodiment, and as exemplified by the two specific embodiments discussed below with reference to FIGS. 2-5, the image features 190, 200 can take on a variety of shapes, sizes, colors, and other characteristics. The image features 190, 200 can also be transparent, translucent or reflective (or absorptive of light), albeit at least some portions of the image features will have characteristics different from the general characteristics of the panels 150, 160 to differentiate the features from the rest of the panels.

[0028] In accordance with the present invention, while the first and second image features 190, 200 can take on a variety of forms, the first and second image features are complementary with one another. That is, the first and second image features 190, 200 are related to one another in a manner such that, when the sliding doors 100, 110 are moved to an open position where the doors overlap one another entirely (or, depending upon the embodiment, overlap one another to a particular degree) the first and second image features are combined to form an overall image feature or pattern depicting a real item.

[0029] The term "overall image feature" is not intended to encompass every graphical image and, in particular, is not intended to encompass a disordered amalgam of image features that merely happens to arise as a result of superimposing the first and second image features. Rather, the term "overall image feature" is intended to encompass graphical images that have an independent, recognizable meaning or order representational of a real item that is different from,

and not provided by, either the first image feature or the second image feature by themselves. In terms of its meaning, the overall image feature is often greater than the sum of its image feature parts.

5 [0030] In particularly preferred embodiments of the invention, a fragmentary first image feature is overlapped with a fragmentary second image feature when the sliding doors 100,110 are overlapped such that, due to the overlapping relationship, the overall image
10 feature is formed. Thus, while neither the fragmentary first image feature by itself nor the fragmentary second image feature by itself constitutes or suggests the overall image feature, the overlapping of the two image features produces the overall image feature.

15 [0031] While the first and second image features do not, by themselves, constitute the overall image feature, it is possible that, in some embodiments, one or both of these image features will represent one or more recognizable or real items. In such case, the
20 recognizable or real item(s) represented by the first or second image feature(s) necessarily would be different than the recognizable or real item shown by the overall image feature. Nevertheless, in other embodiments, one or both of the first and second image features will not
25 represent any particular recognizable or real items, even though the overlapping of the first and second image features results in the overall feature that is a recognizable or real item.

[0032] Turning to FIGS. 2 and 3, a first exemplary
30 embodiment of the first and second image features 190, 200 employed on the first and second panels 150, 160 is shown as first and second image features 210 and 220, respectively. FIG. 2 shows the panels 150, 160 to be non-overlapping, as they would generally appear when the
35 sliding doors 100, 110 were in a closed position.

Consequently, each of the first and second image features 210, 220 is visible independently from the other image feature.

[0033] As shown, the first image feature 210 encompasses a ring 230, a plurality of dots 240 extending horizontally away from the ring, and a vertical line component 250 extending downward away from the ring. The vertical line component 250 and the ring 230 each have a thickness that is identical to, or approximately identical to, the diameter of each of the dots 240. The second image feature 220 includes an additional dot 260 and a horizontal line component 270 extending away from the additional dot to the right. The horizontal line component 270 has a thickness that is about the same as the diameter of the additional dot 260, which is somewhat larger than the diameter of the dots 240 but less than the inner diameter of the ring 230.

[0034] In contrast to FIG. 2, FIG. 3 shows the first and second panels 150, 160 to be completely overlapping one another, as they would appear when the sliding doors 100, 110 are positioned in a fully-opened position. With the panels 150, 160 completely overlapping, the first and second image features 210, 220 are superimposed and combine to form an overall image feature 280. As shown, the overall image feature 280 includes a target formation 290 having a bull's eye and accompanied by a horizontal line component 300 and a vertical line component 305. The horizontal line component 300 in particular is formed by the superimposition of the horizontal line component 270 and the plurality of dots 240, which only remain slightly visible (if at all) due to the presence of the horizontal line component 270.

[0035] As shown, the overall image feature 280 has a recognizable form that is substantially different than that of either of the first and second image features

210, 220. The target formation 290 in particular is an aspect of the overall image feature 280 that is greater than the sum of the parts supplied by the first and second image features 210, 220 (namely, the ring 230 and the additional dot 260) insofar as a target with a bull's eye has a meaning that is entirely different than the meanings of a ring and a dot.

[0036] Of further significance in relation to the embodiment of FIGS. 2 and 3 is that the particular first and second image features 210, 220 not only make it possible to arrive at the overall image feature 280 when the panels 120, 130 are completely overlapping, but also provide a meaningful, progressive image that changes as the degree to which the panels 150, 160 overlap varies. In particular, as the sliding doors 100, 110 and consequently the panels 150, 160 are moved toward one another from a fully-closed position to a fully-opened position, the additional dot 260 progressively impinges each of the plurality of dots 240 as it moves from right to left and, further, once the additional dot 260 proceeds past a given one of the dots 240, the horizontal line component 270 then further impinges and envelopes that dot 240.

[0037] To summarize, therefore, as the panels 150, 160 are moved toward one another, a visual indication of the movement is provided as successive ones of the dots 240 are impinged and enveloped. Further, if movement of the panels 150, 160 should stop intermediate the fully-closed and fully-opened positions, the relative positions of the horizontal line component 270 and additional dot 260 in relation to the dots 240 will provide an indication of the degree to which the sliding doors 100, 110 have been opened.

[0038] Turning to FIG. 4, a second embodiment of the first and second image features 190, 200 on the panels

150, 160 of the sliding doors 100, 110 is shown as first and second image features 310 and 320, respectively. In this embodiment, the first image feature 310 on the first panel 150 specifically includes a first plurality of horizontal line components 330 extending inward from a left side 340 of the panel 150 and a second plurality of horizontal line components 350 extending inward from a right side 360 of that panel. The line components 330, 350 are generally spaced apart from one another in a vertical direction, with the line components 330 being generally interleaved with the line components 350 in terms of their relative vertical positions. As for their horizontal extent, the line components 330 and 350 only extend inward to a middle region 370 of the panel 150 and do not extend inward so far that the line components 330 contact or extend past the components 350, or vice-versa.

[0039] Similar to the first image feature 310, the second image feature 320 on the second panel 160 includes a third plurality of horizontal line components 380 that begin somewhat to the right of a left side 390 of the panel and extend inward therefrom, and a fourth plurality of horizontal line components 400 that begin somewhat to the left of a right side 410 of the panel and extend inward therefrom. The line components 380, 400 as in the case of the line components 330, 350 are generally vertically spaced apart from one another, and the line components 380 are interleaved with the line components 400. However, in contrast to the line components 330, 350, the line components 380, 400 extend inward past one another. The horizontal line components 400 of the fourth plurality generally are thicker than the horizontal line components 330, 350 of the first and second pluralities, which are approximately the same in thickness, and which are thicker than the horizontal line components 380 of the third plurality.

[0040] While FIG. 4 shows the panels 150, 160 and the image features 310, 320 thereon to be non-overlapping, FIG. 5 shows the panels to be fully-overlapping one another. Consequently, in FIG. 5 the first and second image features 310, 320 are superimposed to form an overall image feature 420. In contrast to the first and second images features 310, 320, which merely show sets of horizontal line components, the overall image feature 420 is intended to resemble a keyboard. Additionally of significance is that, as the panels 150, 160 move from a non-overlapping position toward the completely-overlapping position, the line components 330, 350, 380 and 400 become increasingly and to varying degrees superimposed upon one another. Consequently, as the panels move in relation to one another, the overall image feature varies in interesting manners that provide graphical texture.

[0041] The embodiment of FIGS. 4 and 5 also demonstrates that the overall image feature 420 that results from the overlapping of the individual image features 310, 320 associated with the different panels 150, 160 in part depends upon the degree of transparency or translucence of the individual image features themselves. In particular, FIG. 5 demonstrates that the overall image feature 420 takes on a variety of different shadings at different locations since the horizontal line components 330, 350, 380 and 400 are not entirely darkened or absorptive but rather are partly transparent. Consequently, when two horizontal line components from the two different image features 310, 320 are overlapped, a lesser amount of light passes through the overlapped line components than through the line components that are not overlapped.

[0042] The embodiments of the first, second and overall image features shown with reference to FIGS. 2-5

are intended to be exemplary of a variety of possible image features that could be employed on a pair of panels in a bathing enclosure in accordance with the present invention. That is, the present invention is intended to encompass bathing enclosures having panels on which a variety of image features other than those shown herein are provided, so long as the panels on which the image features are provided can be moved between non-overlapping and overlapping positions and so long as the overall image feature formed by the superimposition of individual image features has a meaning or form that is recognizably different than either of the image features being combined and represents a real item.

[0043] Although the embodiments disclosed above pertain to a bathing enclosure having two sliding doors, each of which can slide in relation to the other, the present invention also is intended to pertain to a variety of other bathing enclosures. For example, in some bathing enclosures, only one panel is slidable as part of a sliding door, and yet it is possible to form an overall image feature using an image feature on that panel insofar as that panel can be slid in relation to a fixed wall panel that has another image feature.

[0044] In other embodiments, more than two image features (e.g., three image features), displayed on more than two panels are combined to form an overall image. In such embodiments, one, two or more of the image features are potentially located on sliding panels, and some of the image features also can be located on fixed wall panels. In further embodiments in which more than three different image features are available for being overlapped (e.g., three image features on three different panels), it is possible that more than one different overall image feature could be formed by different combinations of the three or more image features.

[0045] Further, although the embodiments of FIGS. 2-5 relate to bathing enclosures in which both of the two sliding door panels are generally transparent or translucent, the present invention is also intended to encompass embodiments in which only one or some of the superimposed panels are transparent or translucent. For example, in certain alternate embodiments employing two sliding doors as shown in FIG. 1, the door positioned more inwardly (e.g., the door 110) could be entirely reflective (and even partly absorptive) of light while the door positioned more outwardly (e.g., the door 100) was transparent/translucent. In such embodiments, an overall image feature formed by the combination of first and second image features on the two door panels would still be visible from the outside of the bathing enclosure when the two door panels overlapped, even though such overall image feature would not be visible from the inside of the bathing enclosure.

[0046] While the foregoing illustrates and describes the preferred embodiments of this invention, it is to be understood that the invention is not limited to the precise construction herein disclosed. The invention can be embodied in other forms without departing from the spirit or essential attributes of the invention. Accordingly, reference should be made to the following claims, rather than to the foregoing specification, as indicating the scope of the invention.

[0047] Therefore, the invention should not be limited to just the described embodiment. To ascertain the full scope of the invention, the following claims should be referenced.

INDUSTRIAL APPLICABILITY

[0048] The invention provides an improved bathing enclosure having one or more sliding doors in which both individual image features associated with specific panels

and combination image features associated with overlapping panels can be displayed.